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Socioeconomic factors causing Hepatitis B and C in Jaffarabad District, Balochistan

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Abstract

Hepatitis B and C (HBV and HCV) are the main cause of spreading viral Hepatitis rapidly which has become a serious health issue in the world. Awareness about its risk factors, treatment, and prevention in Jaffarabad district is of major importance. This study analysed the socio-economic factors apparently causing Hepatitis B and C in Jaffarabad district of Balochistan. A hospital based descriptive study was conducted by interviewing 200 Hepatitis B and C registered patients at Tehsil hospitals of Jaffarabad district. Data referring to the age, education, gender, family status, and awareness about viral Hepatitis, possible modes of transmission, and false perceptions relating to Hepatitis B and C were gathered and analyzed using SPSS software. The community of District Jaffarabad was not fairly aware about the various routes of transmission of the two blood borne viruses. About 33% believed in myths that Hepatitis B and C virus are transmitted by sharing food with the infected persons; 27% of the patients had no knowledge about the transmission factors of the both viruses and only 30.5% of the study population knew that HBV and HCV can be transmitted by unsafe needle prick. The data indicate that unscreened blood, used syringes, unsafe sex, cupping, contaminated surgical instruments, spouse infected with Hepatitis B and C, sharing toothbrush/Miswak with others, Parents infected with Hepatitis B and C, sharing nail clipper with others, and unsafe scissors and cottons used by midwives are the major causal factors. Awareness of Jaffarabad district community about safety measures, treatment and information about different routes of transmission of Hepatitis B, C needs improvement. Strict use of disposable syringes, needles, sterilized surgical instruments, and organizing continued health education programs will help in preventing the transmission of Hepatitis B and C viruses.

Keywords: Balochistan, Causes, Hepatitis B and C virus, Jaffarabad, Socioeconomic factors

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1. Introduction

Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are the key reasons of chronic and severe liver diseases such as liver cirrhosis and hepatocellular carcinoma (HCC), causing approximately 1.4 million deaths per annum (GBD, 2015). The World Health Organization (WHO) termed Hepatitis C virus (HCV) as a "viral time bomb" (Umar et al., 2010). It is approximated that a similar ratio of the overall liver cancer mortality can be associated with HBV (30000) and HCV (34500), (GBD, 2015). Hepatitis is a worldwide concerning health issue influencing millions of people yearly (WHO, 2009). The World Health Organization (WHO) reported that the regions with great Hepatitis B endemicity (>8%) existed mostly in developing countries like Sub Saharan Africa , South East Asia, parts of the Middle East and the Amazon Basin (WHO, 2002). The developing countries in the African Region believe that Hepatitis is a serious public health problem. The commonness of HBV is 8% in the West Africa and 5-7% in the Central, Eastern and Southern Africa regions. The prevalence of HCV is increasing in some areas, up to 10% (Su et al, 2010). India, which is the neighboring country of Pakistan, has estimated six times greater population than Pakistan has high prevalence of HBV and HCV (Travasso, 2014).

Pakistan is greatly epidemic with HBV (Noorali et al., 2008). The ratio, according to the prevalence of Hepatitis C, (HCV) is 6.7% in Punjab, 5% in Sindh, 1.5% in Balochistan and 1.1% in Khyber Pakhtunkhwa respectively (Azarkar et al, 2010). In Balochistan, three studies highlighted a significant prevalence of Hepatitis B surface antigen (HBsAg), (9.3% weighted average, range 3.9—11.0%) in comparison to Punjab, Khyber Pakhtunkhwa and Sindh (Quddus et al., 2006). The statistics were higher in Balochistan (4.3%), followed by Sindh 2.5%, Punjab (2.4%) and Khyber Pakhtunkhuwa 1.3%. Generally HBsAg was greater in females i.e. 2.9% in comparison to males i.e. 2.0% (PMRC, 2008).

2. Social factors causing Hepatitis B and C virus

Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) are known as the main reason of acute mortality and morbidity. It is assessed that 2 billion people worldwide have Hepatitis B virus and above 360 million have chronic liver infections (WHO, 2017). Numerous transmission factors have been recognized globally, e.g., blood transfusion, injection drug users (IDUs), professions (Barbers, healthcare workers (HCWs) etc.), household contact, sexual contact, dental procedures, and surgical procedures etc. (Shafiq et al., 2015).

2.1 Quacks

In Pakistan, healthcare centers are complex, plural and multilayered. In healthcare centers there is a huge underworld and the government has less capacity to regulate or monitor these healthcare centers. There are countless numbers of quacks, hakeems, homeopaths, midwives (dais), spiritual healers, and sex specialists who are dispensing contaminated injections and are engaged in minor operations, without proper resources, training and instruments to guarantee sterilization. Regrettably, the majority of the patients have no idea about the side effects of unsafe injections (Zakar, 2004). Approach to inexpensive treatments and common professionals are purely linked with poverty. Due to lack of any strict law in the country the more demand for easily accessible health practitioners in every area has provided a chance to quacks to get advantages of this demand (Hussain, 2012).

2.2 Sexual transmission

In the United States 20% infections of HCV are because of the sexual activities (Alter, 1999). According to two different studies from the Congo and the USA, show less prevalence of HCV among the sex workers (Buffington et al., 2007), (Laurent et al., 2001). In Pakistan the main problems are lack of awareness, illiteracy and less knowledge about the sexually transmitted diseases. Moreover, there is also very low use of condoms in the sex workers (Waheed et al., 2009). It was articulated by Saleem et al, that 17% of female sex workers, 3% of the male sex workers and 4% of transgender men regularly used condoms in the previous months, 67% female sex workers were uneducated, 34% of them had STIs (Irfan et al., 2004), (Qureshi et al., 2007). The international studies found that the sexual spread of hepatitis C virus is extremely less (Alary et al., 2005).

2.3 Injection drug users (IDUs)

In United States, just like in the other countries, there is a continuous wave of hepatitis C virus (HCV) disease among young injection drug addicts (Page et al., 2009). Epidemic of HCV in young adult injectors have been shown by the US Centers for Disease Control and Prevention (CDC) (MMWR, 2012). The infection of HCV is quickly acquired after the start of injecting, and occurrence rates are greater among fresh injection drug users, among them a quarter are infected in two years of starting injecting injections (Hagan et al., 2008). A study carried out in year 2003 explained Hepatitis C Virus (HCV) commonness of 93% and among them the 75% injection drug users (IDUs) were from Lahore (Punjab) and Quetta (Balochistan), sequentially (Kuo et al., 2006).

3. Economic factors causing Hepatitis B and C

3.1 Barbers and saloon workers

In the developing countries, the role of barbers and saloon workers in spreading of Hepatitis B virus (HBV) and Hepatitis C virus (HCV) is getting greater importance. Because of illiteracy and limited access to healthcare the ratio of transmitting linked to this profession is showing rising trends (Bari et al., 2001), (Shah et al., 2015). The barbers and saloon workers keep on reutilizing bladed tools for shaving and other piercing instruments on many customers without sterilizing the instruments (Bari et al,. 2001), (Oliveira et al., 2010). Viral hepatitis is a main health issue among the barbers and saloon workers, because they are the possible cause of spreading to various customers (Basit et al., 2014).

3.2 Occupational risk factors

Professions like barbers, healthcare workers, sex workers are highly vulnerable to hepatitis B virus and hepatitis C virus. In Pakistan healthcare workers are showing comparatively greater prevalence (Average 6% and 5.5% for HBV and HCV, correspondingly) than in overall population. Hepatitis C virus (HCV) transmission is greatly limited to health care workers (HCWs), who have suffered, infected needle injuries; common incidence of anti-HCV sero-conversion from an HCV-positive root is 1.8%; spreading has been linked to deep injuries and hollow-bore needles (Yazdanpanah et al., 2005).

3.3 Healthcare workers (HCWs)

The prevention of viral infections among the healthcare workers (HCWs) cannot be overstressed in a healthcare settings where the workers' health is always vulnerable to numerous infectious threats (Ustun et al., 2003). In Healthcare workers (HCWs) 14.4% and 1.4% of HBV and HCV rates have been stated with the maximum occurrence among dialysis unit staff, laboratory staff, dentists, physicians, or nursing staff (Padilla et al., 2010). About 3 million healthcare workers get injured by the instruments in healthcare settings yearly, approximately 2 million risk of Hepatitis B virus (HBV) and 1 million of hepatitis C virus (HCV). Even though there is an effective vaccine present for HBV since eighties, the use of vaccination programs began in nineties worldwide. Nonetheless, HBV causes still large number of deaths (Coppola et al., 2016).

4. Medical factors causing Hepatitis B and C

4.1 Medical and surgical practices

Unsafe medical and surgical practices and serious or small dental procedures are another common factor highly linked with HBV and HCV. These

unprotected practices are considered as the main danger to health of the patients and health care providers. Hepatitis C seroprevalence was 5.5% in health care workers (Previsani, 2002). Such practices contain unprotected procedures, use of contaminated instruments in operation theatres, dental procedures, medical and surgical wards, outpatient departments (OPDs), and emergency wards of hospitals (Beltrami, 2000). In Pakistan, factors associated with the transmission of hepatitis C virus (HCV) are: unqualified health workers, less training, illiteracy, inactive system for prevention of blood borne viruses and post exposure prevention at health care facilities (Janjua et al., 2005).

4.2 Needles in healthcare settings

Injections have been the main cause of HBV and HCV transmission in developing countries. Researches have reported a significant link between injections and the rapid prevalence of HBV and HCV (Hauri et al., 2004). Khan et al articulated that, in Karachi (Sindh) 44% of the adult patients preferred injections despite knowing that the oral medications are effective, contaminated, used syringes were being utilized in 94% of the injections examined by the research team and nobody of the 18 healthcare workers knew that HCV could be spread by injections (Luby et al., 1997).

4.3 Blood transfusion

Hepatitis B virus (HBV) and hepatitis C virus (HCV) commonness ratio is because of blood transfusions. In the developing countries people are greatly suffering from anemia, and are prone to injuries and other complications like practicing obstetrics. In these circumstances blood transfusion is lifesaving. The situation becomes more problematic if the blood is not appropriately stored or is taking blood-borne infectious agent. According to the WHO organization in Pakistan approximately 1.2 to 1.5 million transfusions are performed yearly in Pakistan (WHO, 2009).

4.4 Dental Treatment

The problem of Hepatitis disease in dentistry is a significant one (Mahboobi et al., 2010), (Gillcrist, 1999). So far there has been no exact reason on the function of dental treating in Hepatitis spread; whether it is transmitted from patient to another patient, patient to dentist or vice versa (Mahboobi et al., 2013). Findings that called dental treatment as a factor for Hepatitis virus were often from Africa, the Middle East and the Easter Europe, perhaps owing to non-devotion to strategy on disease control in those territories, and possibly by the utilization of reusable syringes, and the less sterilization tools (Kerzman et al., 2007).

4.5 Haemodialysis

Dialysis mode has been recognized as a main transmission factor for Hepatitis B virus (HBV) and hepatitis C virus (HCV), with notably greater ratio of sero-conversion examined in haomodialysis than peritoneal dialysis (PD) (Pereira, et al., 1997), (Thanachartwet et al., 2007). According to a South American research, the only transmission threat factor greatly connected with HBV and HCV diseases was haemodialysis treatment (not blood transfusion) (risk ratios 22.3 and 5.7, correspondingly), it was suggested that the both HBV and HCV were transferred during the haemodialysis (HD) environment (Cendoroglo et al., 1995).

5. Prevention of HBV infection

The best approach to prevent HBV is: safe blood products and another approach to protect oneself is behavioral change; unresisting immune prophylaxis in the individuals who have been vulnerable to HBV and active vaccination. Deferment of the blood donors with the risky behaviors and the better screening have resulted in the lessening of HBV, which is transferred through the blood transfusions. Using of condoms while sexual process is generally suggested for the prevention of HBV (Hou, 2005).

5.1 Treatment of HBV

It is identified that the active duplication is the main liver damage driver and infection growth; as a result, viral repression plays a very significant role in HBV chronic management (Liaw, 2006). The basic goal of chronic HBV disease treatment is to constantly repress replication of HBV. The repression helps to decrease the pathogenicity and infectivity of HBV infection. The reduced pathogenicity results in the reduction of hepatic necro inflammation. The short time goal of treatment is to acquire first reaction in HBeAg sero-conversion terms and suppression of HBV DNA, normalization of ATL, and preventing of hepatic decompensation (Liaw et al., 2008).

6. Prevention of HCV

There is not a single vaccination has been introduced to fight against the Hepatitis C virus (HCV). Controlling the new infections (initial prevention) is important particularly. Antiviral therapy efficacy has played a considerable role to the secondary prevention (eliminating virus form the patients) and then tertiary preventing (preventing complexities from the viruses in infected patients) (Irving et al., 2006). In nonexistence of vaccinations, all safety measures to stop infection of Hepatitis C virus (HCV) ought to target decrease of spreading of the deadly virus. (Van, 1999).

6.1 Treatment of HCV

The treatment of Hepatitis C virus (HCV) became possible in the decades after the detection of the HCV infection in 1989; interferon alpha was the first treatment drug for HCV, which is a protein released by lymph cells (cytokine) in the pathogen presence. When dispensed by hypodermic injection, it repressed the duplication of HCV and controlled the response of immune against the cells of the liver affected with HCV (Parekh et al., 2014). Cure rates increased by adding ribavirin, which is a nucleoside inhibitor with the indistinct mechanism of action against HCV (Schinazi et al., 2014). Pakistan has achieved an appreciable development in HCV treating by increasing the patients number treated yearly from 65,000 in 2015 to 160,000 in 2016. Hepatitis C virus infected patients are treated with Ribavirin and Sofosbuvir in the private and public sectors currently (NHSF, 2017).

7. Pakistan's Hepatitis Response

In order to deal with Hepatitis disease, the Prime Minister of Pakistan initiated the program for the control and prevention of viral hepatitis (2005-2010). Hepatitis B and C national sero-prevalence survey was also carried out by Ministry of Health in 2008 to get baseline knowledge on infection spread. All the provinces had their objectives of preventing the viral infections for example, dealing with the acute infections (diagnosis, screening and treatment), giving awareness on the control and prevention of Hepatitis infection, policy environment change (implementation and official declaration of efficient health laws and policies) and strengthening the health system (enhancing the infrastructure, improving the diagnosis, treatment services and capacity building of the workers (NHSF, 2017).

8. Study Area

The study was conducted in Jaffarabad district, Balochistan. Jaffarabad lies in the South-East of the Pakistani province of Balochistan, a population of 513,813 (2017 census). Jaffarabad's headquarters are at Dera Allah Yar/Usta Mohammad. Jaffarabad district is governmentally divided into three tehsils (Gandakha, Jhat pat (Dera Allah Yar), Usta Mohammad) (GOP, 2012). The tribes of district Jaffarabad are: Khoso, Jamali, Magsi, Mengal, Bugti, Rind, Mari, Umrani, and other communities. Jaffarabad district is highly vulnerable to Hepatitis B and C viruses in Balochistan. A study carried out by the Pakistan Health Research Council (PMRC), Ministry of Health, Statistics Division and the Federal Bureau of Statistics, the prevalence of Hepatitis B virus (HBV) in district Jaffarabad was estimated at 5.5% and Hepatitis C virus (HCV) at 5.2%, the high risk districts for Hepatitis B and C viruses is Jaffarabad (PMRC, 2008). The highest prevalence is ascribed to utilizing the contaminated needles/syringes, utilizing contaminated blades at barber shops, and utilizing

unsafe surgical instruments. This shows the dire need to ascertain the socio-economic risk factors causing HBV and HCV and also creating awareness among people about the various modes of transmission and prevention of Hepatitis B and C viruses in Jaffarabad.

9. Methods of Data collection and Analysis

A hospital based descriptive study was conducted in the study area of Tehsil hospitals of Jaffarabad district, Balochistan, Pakistan. Two hundred (200) Hepatitis B and C registered patients were taken as study subjects. The study subjects were randomly interviewed with a pre-designed, and structured questionnaire with closed and open ended questions. The respondents were interviewed after translating the questions in the local languages (Balochi, Brahui). Additional information was also gathered from the key informants such as Provincial Coordinator of Hepatitis Control Program Balochistan, and liver specialists of Bolan Medical College Quetta. The data was analysed by the Statistical Package for Social Sciences (SPSS) using the correlation and linear regression model tests.

10. Results

The findings of the study discovered there were 74% male and 26% female Hepatitis B and C patients in Jaffarabad district of Balochistan. The results showed that 47.5% of the respondents were infected with Hepatitis B virus and 50.5% were infected with Hepatitis C virus. However, 2.0% of the respondents were infected with both of the viruses (Hepatitis B and C) simultaneously (Table 1). The average age of the respondents/patients was 35 years. Results showed that 67.5% of the respondents were married, 30.5% were singles and 2.0% were widow. Findings revealed that 15% of respondents were with the primary education, 28% secondary, 14% intermediate and 8% had completed their Bachelors. However, 34% of respondents were illiterate (Table 1). Findings showed that 78% respondents lived in joint family while only 22% in nuclear system. The results further explained that 50.5% of the patients in Jaffarabad district were Balochi speaking, 46% Brahui, and 3.5% Sindhi. The results regarding profession of patients illustrated 12.5% students, 27% government servants, 14.5% self-employed (contractors, business owners), and 46% farmers (Table 1).

Table: 1 Respondents' profile

Description	Frequency	Percentage
Gender of the respondents		
Male	148	74.0
Female	52	26.0
Marital status of the respondents		

Single	61	30.5
Married	135	67.5
Widow	4	2.0
Education of the respondents		
Primary	31	15.5
Secondary	57	28.5
Intermediate	28	14.0
Bachelors	16	8.0
Illiterate	68	34.0
Hepatitis type of the respondents		
Hepatitis B	95	47.5
Hepatitis C	101	50.5
Hepatitis B and C	4	2.0
Profession of the respondents		
Student	25	12.5
Government servant	54	27.0
Self employed	29	14.5
Farmer	92	46.0

Field survey, 2018

10.1 Socioeconomic factors associated with Hepatitis B virus and C virus

The correlation analysis was applied initially to determine the socioeconomic factors seemed to have been causing Hepatitis B and C (HBV and HCV) in Jaffarabad district of Balochistan. The 24 hypothesized factors/variables were included namely marital status (X_1), unawareness about risk factors of Hepatitis B/C infections (X_2), undergone dental surgery/RCT (X_3), unsafe needle prick (X_4), injected used syringes at clinics/hospitals (X_5), inserted unsafe cannula (X_6), made tattoos on body (X_7), pierced ear/nose with unsterilized needles (X_8), used antimony (Surma) traditional eye liner of others (X_9), shared nail cutters with others (X_{10}), unsafe scissor/cotton used by midwives (X_{11}), unsafe sex (X_{12}), parents infected with Hepatitis B/C (X_{13}), undergone surgery (X_{14}), undergone endoscopy (X_{15}), removed ear wax with unsafe instruments (X_{16}), shared tooth brush/miswak with others (X_{17}), unsafe cupping instruments (X_{18}), living in house with infected Hepatitis B/C patients (X_{19}), shared eye lenses with others (X_{20}), undergone kidney dialysis (X_{21}), shaved with contaminated razors (X_{22}), used contaminated instruments at hospitals (X_{23}) and unscreened blood (X_{24}).

The correlation test detected 6 factors associated with Hepatitis B and C namely, unawareness about Hepatitis B and C (X_2), injected used syringes (X_5), surgery (X_{14}), cupping (X_{18}), living in house with infected Hepatitis B and C patients (X_{19}), and unscreened blood (X_{24}).

10.2 Positively associated factors

Six factors namely, unawareness about the risk factors of Hepatitis B and C virus (X_2), injected used syringes (X_5), surgery (X_{14}), cupping (X_{18}), living in house with infected Hepatitis B and C patients (X_{19}), and unscreened blood (X_{24}) were positively correlated with Hepatitis B and C viruses in the research area (Table 3).

Results of the analysis revealed positive correlation (.170*) between unawareness about the risk factors of Hepatitis B/C virus (X_2) and Hepatitis B/C virus. People who did not know about the factors causing hepatitis B/C were exposed factors, namely unsafe sex, used unsterilized instruments, unscreened blood. The results also indicated a significant positive correlation (.201**) between injected used syringes (X_5) and HBV/HCV. There was a strong association between injected used syringes and Hepatitis virus. Unsafe syringes significantly caused Hepatitis B/C in Jaffarabad district. Furthermore, results suggested a positive correlation (.175*) between surgery (X_{14}) and the viral Hepatitis B and C. Transmission of Hepatitis is positively linked with surgeries and contaminated instruments used during the surgeries. Hepatitis B/C virus is more prevalent in the people who had undergone surgeries. The results of the findings also suggested a significant positive correlation (184**) between cupping (X_{18}) and HBV/HCV infection, the practice of cupping treatment with contaminated instruments carried a significant risk of HBV/HCV. Furthermore, there is also statistically significant, positive correlation (.151*) between living with someone infected with Hepatitis B, C (X_{19}) and Hepatitis B and C. Individuals who lived with infected patients of Hepatitis B/C virus were more vulnerable to Hepatitis disease and the frequency of HBV and HCV was higher among the individuals who lived with HBV and HCV positive patients. The results of the correlation analysis discovered that there is a positive, significant correlation (.208**) between unscreened blood transfusion (X_{24}) and HBV and HCV. The results described that, those who had unscreened blood transfusion were more vulnerable to Hepatitis B and C and the prevalence of HBV/HCV was greater among the people who had received unscreened blood as compared to the people who had not received unscreened blood in the study population. The overall results reflected that 99 (49.5%) of the respondents had blood transfusion, 81.5% had injected injections, 80% had inserted cannulas, while only 7.5% had used condoms during sexual intercourse, 57% of the patients had undergone dental surgery/RCT, 23% had undergone endoscopy. However, an overwhelming proportion 90% had shared nail clippers with others and 57% had unsafe sex in the study area.

Table: 3 Factors causing Hepatitis B, C viruses in Jaffarabad, Balochistan

Variables	Description	Pearson Correlation	Significance
X_1 Unscreened blood	1 if had blood transfusion; 0 if otherwise	.208**	.003
X_2 Unawareness about risk factors of Hepatitis B/C infections	1 if aware; 0 if otherwise	.170*	.016
X_3 Injected used syringes at clinics/hospitals	1 if injected used syringes; 0 if otherwise	.201**	.004
X_4 Undergone surgery	1 if undergone surgery; 0 if otherwise	.175*	.013
X_5 Cupping	1 if done cupping; 0 if otherwise	.184**	.009
X_6Spouse infected with Hepatitis B/C	1 if infected, 0 if otherwise	.151*	.033

Field survey, 2018

10.3 Factors causing Hepatitis B and C in Jaffarabad district, Balochistan

The following twenty-four (24) factors were included in linear regression to analyze factors that significantly caused HBV and HCV, categorically.

Marital status (X_1), unawareness about risk factors of Hepatitis B/C infections (X_2), undergone dental surgery/RCT (X_3), unsafe needle prick (X_4), injected used syringes at clinics/hospitals (X_5), inserted unsafe cannula (X_6), made tattoos on body (X_7), pierced ear/nose with unsterilized needles (X_8), used antimony (Surma) traditional eye liner of others (X_9), shared nail clippers with others (X_{10}), unsafe scissor and cotton used by midwives (X_{11}), unsafe sex (X_{12}), parents infected with Hepatitis B/C (X_{13}), undergone surgery (X_{14}), undergone endoscopy (X_{15}), removed ear wax with unsafe instruments (X_{16}), shared tooth brush/miswak with others (X_{17}), unsafe cupping instruments (X_{18}), living in house with infected Hepatitis B/C patients (X_{19}), shared eye lenses with others (X_{20}), undergone kidney dialysis (X_{21}), shaved with contaminated razors (X_{22}), used contaminated instruments at hospitals (X_{23}) and unscreened blood (X_{24}).

The linear regression detected 8 factors that were significantly associated with Hepatitis B and C in Jaffarabad district of Balochistan. Out of eight factors associated, six variables significantly and negatively associated with HBV and HCV. However, two factors positively caused Hepatitis B, C viruses namely, marital status and unsafe sex (Table 5).

The results of the analysis indicated that marital status was significantly and positively linked with HBV/HCV. The results reported higher prevalence of Hepatitis B and C in married patients as compared to unmarried. The frequency of Hepatitis B and C was 67.5% among the married patients in district Jaffarabad, Balochistan. It may be due to lack of education and awareness in the people that had earlier sexual contact before marriage which was later transmitted to her or his spouse. The findings of the study revealed that unprotected sex was highly significant and it increased the risk of Hepatitis B and C. The results suggested that Hepatitis B, C viruses were prevalent due to unsafe sex in the study area. Moreover, people who exposed themselves to risky conditions like, unsafe sex were more vulnerable to such deadly diseases and acquired HBV and HCV than those who avoided unsafe sexual activities. The main problems in the study area were illiteracy, lack of awareness about the risk factors of Hepatitis B and C and low use of condoms.
The habit of sharing of toothbrush/Miswak (traditional toothbrush/stick) is associated with the small risk of hepatitis B and C. The present data showed that 16.5% of cases are involved in that behavior in Jaffarabad district. However, sharing toothbrush/miswak with others increased the risk of HBV and HCV and the frequency of Hepatitis was less among the respondents who did not share toothbrush/miswak with others. In addition, the results explained that the two blood borne viruses were significant among the respondents whose parents were infected with Hepatitis B and C. The history of parents HBV and HCV status significantly transmitted the both viruses. The frequency of parents of the patients infected with Hepatitis B and C was 52.5% in the study area. On the other hand, the results illustrated that sharing nail clippers with others was negatively associated with Hepatitis B and C viruses. The percentage data of the current study depicted high frequency of sharing nail clippers 90% in households. However, sharing nail clippers is a minor risk factor of HBV and HCV. Furthermore, the results showed, unsafe scissors and cottons used by midwives was significantly and negatively associated with HBV and HCV. The unsafe scissors and cottons used by the midwives increased the risk of acquiring Hepatitis B, C in the study population. However, results showed less frequency of Hepatitis B and C where the practice of midwifery was low.

Table 5 Regression coefficients of variables causing Hepatitis B and C in district Jaffarabad, Balochistan

Variables	Description	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
(Constant)		739	.123		6.000	.000
X_1Marital status	1 if married; 0 if otherwise	.254	.073	.234	3.471	.001
X_2Sharing toothbrush/Miswak with others	1 if not shared toothbrush/Miswak; 1 if otherwise	-.191	.098	-.132	-1.945	.053
X_3Had unsafe sex	1 if had unsafe sex; 0 if otherwise	.266	.076	.245	3.507	.001
X_4Parents infected with HBV/HCV infection	1 if parents not infected with HBV/HCV infection; 0 if otherwise	-.099	.047	-.153	-2.126	.035
X_5Shared nail clipper with others	1 if not shared nail clipper with others; 0 if otherwise	-.244	.122	-.136	-2.002	.047
X_6Unsafe scissors and cotton used by midwives	1 if not used unsafe instruments; 0 if otherwise	-.187	.092	-.143	-2.039	.043

Field survey, 2018

11. Discussion

The provision of healthcare facilities by the government to the people living mostly in remote areas has always been a challenge in developing countries including Pakistan. Prevention, treatment, management for the diseases like Hepatitis B and C is apparently not possible owing to ignorance and myths about the diseases. Findings of this study showed that the highest majority (66%) of people were educated and were Hepatitis patients. Poverty, illiteracy, risky health practices, and unscreened blood have seriously increased the risk of Hepatitis B and C. According to an international study, Hepatitis B and C risk factors through blood transfusion had been decreased to zero (Prati, 2006). Unfortunately, in this research this transmission factor is still present in our society and significantly causing Hepatitis B and C. Blood transfusion is still a problem due to less organized infrastructure and lack of well-educated and trained staff in Pakistan. The donors give blood due to fear of death of a relative, family pressure or further complication of disease. Unfortunately,

81.5% patients had injected used syringes from quacks. Unsafe syringes for curative intentions was discovered to be the statistically significant risk factor linked with the spread of Hepatitis B and C. In Pakistan unnecessary injections are given frequently due to the dominant view among the people that injections are more effective as compared to the oral medications (Janjua et al., 2006). Alarmingly, About 69% of patients had not been vaccinated for Hepatitis B virus, this extremely low percentage of vaccination possibly increased the risk of HBV. Moreover, the results of this study explained that male patients had higher Hepatitis B and C virus prevalence (74%) as compared to female patients. This can be linked to the fact that the males in Jaffarabad are more active socially than the females. In addition, they are more vulnerable to Hepatitis B, C viruses risk factors as compared to females, for instance circumcision, hair dressing. On the other hand, the frequency data showed that 92.5% of the patients had not used condoms while having sexual intercourse. Overall, the findings of the study depicted higher prevalence of Hepatitis C virus vis-a-vis Hepatitis B virus even though the transmission routes are the same, thus showing the absence of Hepatitis C vaccination as the main obstacle. The key informants discussed that the main risk factors for HBV and HCV are dental procedures, blood transfusion, unsafe dialysis, unsafe circumcision, unsafe medical instruments, unsterilized barber instruments, making tattoos, and among them unsafe sex, unscreened blood, surgical instruments transmit these two blood borne viruses rapidly from one person to another. On the other hand, Hepatitis B and C are not transmitted through human saliva, there has been no such evidence reported to substantiate saliva as a risk factor for Hepatitis B and C. Moreover, living with Hepatitis B and C patient can spread Hepatitis B and C by sharing toothbrushes, nail cutters, razors, and by sexual contact between spouses, while the international studies suggest that HCV sexual transmission is very low (Vandelli et al., 2004). Furthermore, HBV is more infectious and dangerous as compared to HCV. The key informants suggested that Hepatitis B and C can be prevented by health education, using disposable syringes, screening blood properly before blood transfusion, using of condoms, vaccinating for Hepatitis B virus and by ensuring healthy life style. Vaccination is the most productive way of controlling Hepatitis B virus worldwide. Vaccine has an excellent record of effectiveness and protection and it is 95% effective in stopping development of chronic carrier stage. Moreover, the key informants told that the both viruses are treatable. HBV can be treated by taking Tenofovir tablets for one year and HCV by taking Sofosbuvir, Ledipasvir for three months. Ribavirin is also used to treat HCV with interferon tablets.

11.1 Social factors causing Hepatitis B and C

This study found that the main factors in spreading Hepatitis B and C are unscreened blood, spouse infected with Hepatitis B and C, reuse of syringes, unawareness about risk factors of HBV and HCV, surgery and cupping in Jaffarabad district. Factors like surgery, unscreened blood and syringes are primarily involved with the doctors but still people are getting infected with Hepatitis B and C because of these risk factors. That is due to the carelessness of the doctors, quacks and the other healthcare workers. Unscreened blood is most strongly linked and seemed to have been a great factor causing HBV and HCV in the study area. In this study, the total data sample showed that around 99 (49.5%) patients had history of blood transfusion. Unscreened blood transfusion is still a problem owing to lack of well-educated and properly trained staff. There is no expert donor counseling, strong monitoring at the hospitals. The screening methods used for screening are not sensitive enough for early detection of HBV and HCV in Jaffarabad. In Pakistan 66% people of the overall population live in rural areas where unfortunately, there is low access to safe blood transfusion services. In developed countries, the use of blood transfusions with regard to Hepatitis B and C transmission has reached an unprecedented level of safety. However, the situation is totally different in the poor regions of the world including Pakistan, where millions of people get HBV and HCV every year due to unscreened blood. The key informants told that unscreened blood transmits Hepatitis B and C rapidly from one person to another and by ensuring proper screening of the blood can prevent transmission of the both viruses. Furthermore, this study found that infected spouses increased the risk of spreading Hepatitis B and C. The spouses of anti HBV and HCV positive patients were more probably to be infected with HBV and HCV than other family members and with duration of marriage the infection rate increased. The frequency of Hepatitis B and C was 67.5% among the married people in district Jaffarabad. It was observed during field survey that people of the study area had no knowledge about sexual transmission of Hepatitis B and C between spouses and the use of condom was extremely low (7.5%) which significantly exposed them to Hepatitis B and C.

The results revealed that 85.5% of the patients had injected used syringes in the study area. There was evidence of Hepatitis B and C transmission because of the reuse of syringes. It was observed during field survey that the Doctors and quacks injected one syringe to many patients despite knowing about the risk of transmitting viral infections by the reuse of syringes in Jaffarabad district. Moreover, it has been reported that many groups are involved in recycling and repacking of used syringes and these syringes are later on supplied to medical stores in the study area. Furthermore, the study population

preferred injections as compared to oral medications as treatment options against different diseases which significantly increased the risk of acquiring HBV and HCV.

It is very surprising that people were greatly unaware about the routes of transmission of Hepatitis B and C even they were educated. The results discovered poor knowledge and misperceptions about Hepatitis B and C transmission in Hepatitis patients. The misperception of transmission was by sharing food with the infected patients 33% and some patients misperceived that hot weather of Jaffarabad was the main factor of spreading Hepatitis B and C. On the other hand, 27% of the patients had no knowledge about the transmission factors of the both viruses. These results support the study carried out by Osorio et al, (2010). in Spain where wrong perceptions about Hepatitis are reported. When infected patients were asked about the factors causing Hepatitis B, C viruses, some of them narrated *"Contaminated water, unhygienic foods, hot weather of Jaffarabad and some other diseases like stomach problems, diabetes and tension are the main factors causing Hepatitis B, C viruses"*, which is wrong. However, the key informants told that HBV and HCV are not transmitted by sharing food with the infected patients. They informed that the main factors responsible for Hepatitis B and C are unscreened blood, making tattoos, surgical procedures, unsafe sex, unsafe dialysis, and unsterilized barber instruments.

Surgical procedure seemed to have been a significant factor spreading Hepatitis B and C in Jaffarabad district of Balochistan. It was strongly associated and proved to be a significant factor for Hepatitis B and C. This study data revealed that 31% of the patients had history of surgery in the study area. The Doctors and paramedic staff do not sterilize the surgical instruments before performing surgeries which increases the risk of acquiring Hepatitis B and C. The findings emphasize the importance of properly applying the methods for sterilizing surgical instruments and the use of disposable materials, especially in the emergency wards of the hospitals in the study area, where the high turnover of patients may further increase the risk of HBV and HCV. Similarly, the practice of cupping (Hijama) carries a great risk of viral infections, including Hepatitis B and C. The frequency of cupping (Hijama) was 44 (22%) in Hepatitis B, C patients. A study by Madani revealed that cupping was the transmission mode of Hepatitis C in a large proportion of patients in Saudi Arabia. During field survey it was observed that people made appointments with quacks for cupping treatment. The quacks do not ensure safety and use cupping instruments and syringes on many patients despite knowing the risk of viral infections. Despite the demonstrated risk of transmission of bloodborne diseases, this technique is still practiced commonly in many parts of the world including Pakistan.

11.2 Economic factors causing Hepatitis B and C

The extreme poverty, low income and treatment expenses appeared to be major factors that increased the risk of spreading Hepatitis B and C in the study area. Several viral diseases including HBV and HCV are rooted in poverty. Poor people had no access to Hepatitis B vaccination due to its high cost in the study area. Moreover, it was not accessed easily by everyone because of its availability in few selected areas of Jaffarabad with very less qualified vaccinators. Due to poverty people had to prefer cheaper clinics in the study area where the practitioners were quacks and proper decontamination of medical instruments was not practiced.

12. Conclusion and recommendations

Hepatitis B and C are fatal diseases which can be prevented by immunizations and by different other preventive measures. Several socioeconomic and medical factors have played significant role in raised burden of these viral diseases in Jaffarabad district. The main risk factors causing HBV and HCV are unscreened blood, unawareness about the risk factors causing HBV and HCV, injected used syringes, unsafe sex, cupping, contaminated surgical instruments, spouse infected with Hepatitis B, C, sharing toothbrush/miswak with others, Parents infected with HBV and HCV, sharing nail clipper with others, and unsafe scissors and cottons used by midwives. Unawareness about source, mode and spread of HBV and HCV are the key issues in spread of Hepatitis B and C in Jaffarabad district, and requires immediate redressal on a huge scale. Even though there is Hepatitis Control Program working in Jaffarabad, Chief Minister's Program, because of high prevalence of HBV and HCV in study area, the information of Hepatitis B and C contributing factors and possibilities to prevent further spread of the two blood borne diseases is still insufficient. There was low knowledge in people regarding the different risk factors associated with Hepatitis B and C transmission. Unfortunately, the treatment of Hepatitis B and C is very costly, making a gigantic load on the Pakistan's economy. However, The Government should emphasis more on preventive measures of the viral infections to reduce the upcoming economic and health burden; these comprise safe blood transfusions, appropriate decontamination methods in healthcare settings, use of disposable syringes. The government must take serious steps to create awareness in the general public about the risk factors by the use of media. I recommend that awareness needs to be created about the risk factors of Hepatitis B and C in the overall district of Jaffarabad as well as the Government must regulate the private health sectors. Furthermore, immunization programs are needed to enhance the total Hepatitis B vaccination coverage. The Government should make

advanced policies according to social and cultural context of Jaffarabad district. There should be also health education programs directing both healthcare workers (HCWs) and also public, so that they follow all proper measures to stop the spread of these deadly infections. The communication approach should be productive enough to bring changes in the behavior of the youth so that they would abstain from engaging in such activities that make them expose to Hepatitis B and C. In Pakistan, access to electronic and print media has become possible even in far-flung areas. Unfortunately, media's role in creation of awareness is not satisfactory. If used well, it can be the inexpensive method to prevent transmission of viral Hepatitis.

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